

ALTIMETER

2000

4050

4550.

5125

5750

5990

6890

6920.

7980

MANOMETER

2000\$

4000

4610

5150

5850

6000

6800

6900

8000

F. Peñón (April 12)

Central across

(corrected) Small: appr. .5

Barometer manometer (read): exactly 6

6900 - 6920

Long: appr. .5

Invert. between 29.8 and 29.9

Arrow inner ring: a little above 0
Arrow outer ring: .8

F. Upper Pasture (April 13)

Central across:

Small: appr. .6

Broad: 6.8

Long: appr. 6.178

Invert. 29.838

Arrow inner ring: .1

Arrow outer ring: .2

III Great Bend

ALTIMETER (corrected) 5750'
~~Barometer~~ 5850

Central arrows
Small: 0.5
Broad: 5.75
Long: 7.22

IV Upper edge clavos

5125' - 5150

Central arrows

Small: 0.4
Broad: 5.1
Long: 1.25

V. El Hato

4550 - 4610

Central arrows

Small: 0.4
Broad: 4.5
Long: 4.85

(The other indicators were the same at all 3 of these last stations.
Arrow inner swg: 0.08. Arrow outer swg: 0.8. Dial: 29.8375.)

fewer
12,000 +

Mixed Flocks

①

October 4, 1960

Cerro Punta

Beginning work just below leaf pastures 6:50 a.m.

Group I. 2 Yellow-thr. 2 Fusciceps 1 Black-cheeked W. 1 Wilson's W. 1 Hummingbird.

1 Yellow-thr. f. 1 Fusciceps f. 1 Wilson's leaving without b.f.

20° Wilson's W. feeding about 20 feet apart. Apparently both quite isolated. Then one flies over to attack the other! This is why there is only one Wilson's per flock.

Group II 1 Flamethroat. 1 Mud Flycatcher. 2 Collared Redstarts

Group III. 3 Yellow-thr. 1 Wilson's W. 2 Black-cheeked W.
1 Collared R.

Wilson's W. always seems to be on the outskirts of mixed flocks.
Extremely peripheral!

In Group III, the Black-cheeked W.s. definitely did not continue to go in the direction in which the Yellow-thr. went.

Group II 1 ♂ Wilson's W. 1 Eye-ringed Flatbill

1 Wilson's f → Flatbill.

Group I Same place - 2:20 p.m.

3 Yellow-thighs 1 Yellow-throat

1 Yellowthroat f → Yellow-thigh

Group II Above upper pasture.

2 Collared R, 1 ♂ Wilson's W., 1 Yellow-w. Flycatcher

It is obvious that the Collared Redstarts, the Wilson's Warblers, and some of the small flycatchers (and possibly the House-throated Warblers) are not nearly as closely confined to brush as the bush-tanagers and bush-finches. They will feed in and among isolated trees in the bare pasture, where the brush birds apparently never go.

Twice today (once above and once below the upper pasture) I have seen one or two Red Squirrels running around in the shrubbery, near where mixed flocks of birds were feeding. Silent both times. But last March I remember watching a group of 3 squirrels, feeding in much the same area as a mixed flock of birds; and these squirrels were quite noisy — uttering harsh notes like CN's or ALCN's of some bush-finches (I think).

Perhaps the squirrel is really a member of these mixed flocks too

Mixed Flocks

(3)

I have now seen a pair of slate-throated Redstarts (up here, above the upper pasture!) feeding on the ground. One bare left-wide tail.

I have been much surprised by how quiet all the mixed flocks here seem to be now.

Group VII 3 Yellow-throats, 1 ♂ Wilson's W.

Wilson's f → Yellow-throats

Group VIII 2 ♂ and 1 ♂ Wilson's W. (!!!), 1 Collared R., 1 slate-throated R., 1 Black-cheeked W.

1 Collared R. f → slate-throated R

I also saw slate-throated R. feeding on ground, while Collared R. fed just above ground.

Redstarts seem to be only noisy in flight now — when they utter low "Tut" CN's.

Group IX 3 Yellow-throats, 2 Yellow-throats

1 Yellow-throat f → Yellow-throat

1 Yellow-throat f → Yellow-throat

Group X 2 Sooty caps, 1 Black-cheek W., 2 Yellow-throats, 1 ♂ Wilson's W., 1 slate-throat R., 1 Collared R., 1 mid. Wren

1 Sooty cap f →

1 Sooty cap b.f. ←

Mixed Flock

(D)

1 Black-cheek j. → Yellow-thigh

6 Yellow-thigh f. → Black-cheek

I have used the term "following" in this count in a rather different way from in our counts of the blue and green tanagers and honey creepers. I have included following by hopping as well as by flying. And I have counted each following hop separately, as long as the successive hops were separated by an appreciable pause. The Yellow-thigh following the Black-cheek recorded above may be cited as an example. All these instances of following were really part of one reaction. The Black-cheek was moving rapidly through the bushes. The Yellow-thigh hopped after it, paused, hopped again, paused, etc. etc. etc.

October 22, 1960

Caro Punta

In great bearded area, 6:15 a.m.

Group I. 6 Brown-caps, 2 Buff-fronted Foliage-gleaners, 1 Silver-throat, 2 Yellow-thighs, 2 Chestnut-capped Atlapetes (!), 1 Slate-throated R

3 Foliage-gleaners j. → Brown-caps

1 Silver-throat j. →

5 Foliage-gleaners f. → Brown-cap

(The association of the Chestnut-capped Atlapetes with this flock was probably purely coincidental. Just passing through.)

3 Yellow-thigh f. →

These flocks seemed to form about $\frac{1}{2}$ hour after dawn. Then it was active and noisy (i.e. the Brown-caps were noisy) for about $\frac{1}{2}$ to

Mixed Flocks

(5)

3/4 of an hour. Now (7:55 a.m.) the birds are largely silent and couple are flying. I have yet difficulty seeing the birds now, but I don't think the flock has actually broken up yet.

1 Yellow-thr. f. → Brown caps

1 Brown-cap f. → Yellow-thr.

1 Brown-cap f. → Yellow-thr.

Also 1+ Yellow-faced Parrot and a couple of Hummingbirds in flock temporarily.

There was another burst of activity in the group around 8:15 a.m., but this quickly died down.

Group II 1 Blue Jay, 10 Wilson's W.

1 Wilson's W. f. → Blue

Group III 2 slate-throat R., 10 Wilson's W.

1 Wilson's W. f. → slate-throats

It was quite noticeable that the 1 Blue Jay mentioned above made no attempt to join the Brown-caps, although the latter were quite visible and audible about 100 yards away.

Group I (again) 1 Yellow-thr. f. → Brown Caps

I think the counts of Group I today do not give a very fair picture of the closeness of the association between the Yellow-thr. and the Brown-caps in this flock. The Yellow-thr. stick with the Brown-caps almost all the time. The counts of joining and following are no low simply because the Yellow-thr. are so difficult to see most of the time.

1 Pepper-shrike and 1 ♀ Wilson's W also joined the flock.
Also 1 Ruf.-collared Robin.

For the first time this morning I saw a pair of Black-cheeked Warblers down here. They were not with a mixed flock, however (although by the time I saw these warblers, ca. 9:55, the flocks had rather disappeared anyway.)

One aspect of Group I this morning was rather surprising. The birds moved up and down, quite regularly, along appr 750 yds of road. They worked on both sides of the road, sometimes penetrating 50 yds or so into the brush, away from the road, but no more. They seemed to be following a regular route, going clockwise around an irregular oval. Again and again. They never stayed out of this area, although there did not seem to be any mixed flocks (or any other Brown-caps by themselves) on any side!

There were a few brief bursts of activity in the Group I mixed flock until about 9:15 a.m. separated by longer and longer intervals. And then the birds just disappeared. Presumably retreating.

I am fairly certain that the 2 birds I have cited as "Buff-fronted Folage-gleaners" above were indeed Pholidornis rufus. It is just barely possible, however, that they were Anabacerthia variegaticeps or Crambolanca erythrops. I must check with them.

In any case, this pair of "Folage gleaners" was obviously very very strongly attached to the Brown-caps (probably even more so than the Yellow-throats). Stuck with the Brown-caps almost steadily. Followed them everywhere.

As a result of two days' observation here this trip, I am beginning to think that the mixed flocks here, like the mixed flocks on BCI, tend to be composed of a partly different avianities. Here they are the warblers as

Mixed Flocks

(7)

ocation (comparable to the honeycreeper association on BCI) and the bush
finch and bairn-tanager association (comparable to the tanager association
on BCI).

One thing I forgot to mention above . . . The Brown-caps were
certainly very noisy, the more so, when 5 or 6 of them were quite close together,
and there was a lot of excited-looking flying back and forth. This fly-
ing back and forth was usually accompanied by lots of R. (I think these
R's were only uttered in flight. In any case, they were the sort of R which
always makes me think of "CN Bill's". Between flights + R's, the birds
uttered one single CN's, or fairly slow series of 2 or 3 or 4 CN's. Mostly
"Gack" CN's, I think.) I think these R's and flights must have been hos-
tile. If so, there is still hostility within the flock, even in the middle of the
non-breeding season. Interestingly enough, birds of other species seemed
to be particularly likely to join and follow Brown-caps when they were
flying about excitedly and uttering lots of R's. The intra-specific hostility
of Brown-caps may be considered "attractive" to other species.

I think the mixed flocks here must be more highly developed than
the blue and green tanager and honeycreeper flocks in the lowlands. There
are relatively more cases of overt following and joining here. And I have
yet to see an inter-specific supplanting attack here!

The relationship between the Brown-caps and the Yellow-throats
is certainly not dependent on food. The Yellow-throats often follow 20 feet
behind, and 30-50 feet below the Brown-caps.

The foliage-gleaners, however, are usually right up there with the Brown-
caps. So they may well get insects disturbed by the Brown-caps.

2:55 p.m. Working just above the claves

Group IV 6 Golden-crowned Warbler, 1 slate-throated R, 1 Woodcreeper

1 slate-throat R ♂ → Golden-crown W
1 slate-throat R ♀ → Golden-crown W
1 Woodcreeper ♀ → slate-throat R

Group V 5 Silver-throats, 2 Parula W., 1 Woodcreeper, 1 Pepper-shrike
1 Golden-wing W., 1 Green Tanager, 1 Hummingbird

1 Silver-throat ♀ → Parula
1 Tanager ♀ → Silver-throat
1 Parula intra-specific fight
2 Silver-throat intra-specific fights
1 Golden-wing W. ♀ → Pepper-shrike

Group VI 2 Wilson's W., 2 Blue Tanagers, 1 Silver-throat, 1 Pepper-shrike, 1 slate-throated R, 1 Bay-headed Tanager, 1 Black and white W., 1 White-winged Tanager, 1 Great Kiskadee, 2 Woodcreepers.

1 Blue ♀ → Bay-headed

Also a couple of Pale-billed Robins in group

1 Blue ♀ →

1 Kiskadee supplanting Robin

^(supplanting)
* It is obvious that down here we are getting very heterogeneous "open areas" mixed flocks, like the ones in young second growth in the Cenral Zone. It may be significant, therefore, that I saw my first inter-specific supplanting attacks, and my first intra-specific contact fights, here in the flocks this afternoon.

Although there are certainly Yellow-throated Atlapetes around here

in view, I have yet to see one of them in a mixed flock this afternoon (but I did see a pair following a mixed flock here on the afternoon of Oct 3, the day I arrived). I think they just join mixed flocks less frequently here, because Yellow-throats are about the only ones (and Brown-caps are relatively rare).

The Golden-crowned Kinglets are more noisy when moving about within "Island" 10, acrobatically, into a W. Hill in flight. Their notes are now louder and sharper. The notes of the Black-bellied Warbler

I think (but am not sure) that all the West singers I have seen this afternoon have been boat-crowed Wood-warblers, Lepidocolaptes affinis

Group III (again). There was quite a lull in song after my last observations recorded above, but I finally stopped at 3:30 p.m.

I then went back to Group II and found it still very heterogenous.

By this time, at least 3 Brown-caps had joined the flock. They did not seem to be very "nuclear" within flock. Other species were not reacting to them very frequently (I saw no definite cases of following or following). I suspect that the Brown-caps were less "attractive" simply because there was too much "competition" around - especially the very noisy Silver-throats and Golden-crowned Warblers. You could hardly hear the Brown-caps in the general mix, and many of the other species in the flock were at least as active as the Brown-caps.

October 6, 1960
Cerro Punta

6:15 a.m. Walking right at the level of Cerro Punta

Group I 3 Brown-caps, 1 Chestnut & 2 Green Tanagers

1 Greenlet ♂ → Brown-caps

Group II 2 Brown-caps, 3 Pale-vented Robins, and 1 Chestnut,

1 Yellow-thro., 2 Silver-throats, 1 Goldfinch, 1 Pine-colored &

2 Robins ♂ → Brown-caps

1 Robin ♀ → Brown-caps

2 Robin supplanting Silver-throat

Group III 3 Brown-caps, 2 Yellow-throats, 1 Pale-vented Robin, 1 Wren

1 Woodcreeper, 1 Ruddy-capped Motmot, 1 Grackle

1 Brown-cap ♂ → Yellow-throats

This Brown-cap seemed to be attracted by a burst of Wren among the Yellow-throats. When the Yellow-throats began Wren, all the Brown-caps began SR, and one flew over to the tree in which the Yellow-throats were perched.

1 Wren ♂ → Yellow-throats

1 Yellow-throat ♂ ←

A burst of SR -ing by the Brown-caps seems to provoke a burst of quite loud "Tchuk" CN by the Yellow-throats (who had been silent before). Then a general burst of calling by all the birds in the group, including the Woodcreeper.

Group IV 2 Chestnut-throats, 1 Wilson's W.

Group V 2 Brown-caps, 1 Silver-throat, 1 Collared R, 1 Chestnut-throated R, 1 Golden-wing W., 1 Green Tanant, 1 Wilson's W, 2 Black and white

to W. S.

Group I a flocks of 5 individuals of Wilco's W., Black-headed W.

1 Chickadee f. → Yellow-throats
1 Supercilious Titmouse → ♀

Group II a Yellow-throat ♂, 1 ♂ W. / White-throat R.

Follow-up of first meeting of the threethroats

Group III 2 Yellow-throats, 6 Brown-caps, 2 Collared R., 3 Red-faced Spinetails, 1 ♂ Digrana, 1 ♂ Wilco's W., 1 ♀ Blackburnian

1 Yellow-throat ♂ → Brown-caps
1 Collared R. ♀ →
2 Pepper-throats → Brown Caps
1 Yellow-throat f. → Brown Caps
1 Red-faced Spinetail f. →

I think, from my observations this morning, that the Silver-throats are not really nuclear members of these flocks. More or less regular associates, more or less like the tangas in the blue and open tanager and honeycreeper flocks

Back in the same area 3.20 p.m.

Group IX (probably the same as VII above) 2 Flav-throats, 1 Blackburnian, 2 Brown-caps, 1 Yellow-throat,

Oct. 3, 1960

2

Group I (Probably partly the same as in above) 3 Silver-throats
Brown-caps, 2 slate-throats (Blue), 1 Green-fronted, 1 Rufous-fronted
Gleaning Gleaners, 1 Wilson's W., 2 Palm-wreathed Flycatchers

1 Robin, grey-brown, silver throat

1 Robin ultra-grayish with faint cinnamon spots (2)

The Robin is certainly a most aggressive species. Obviously dominant
in the mixed flocks. These particular robins seem to have a fading gray
not silver-throats.

The slate-throated Redstarts do not seem to be nucleuses in the flock
s. They are perhaps more often associated with mixed flocks than not, but they
don't react to the other species very conspicuously, nor do the others react to the
in very conspicuous.

October 4, 1960

Cerro Punta

Walking by great bend 6:15 a.m.

Group I (The same as group I, Oct. 3) 6 Brown-caps, 2 Rufous-fronted
Gleaning Gleaners, 2 Yellow-throats, 1 Wilson's W., 2 Silver-throats

7 Gleaning Gleaners → Brown-caps

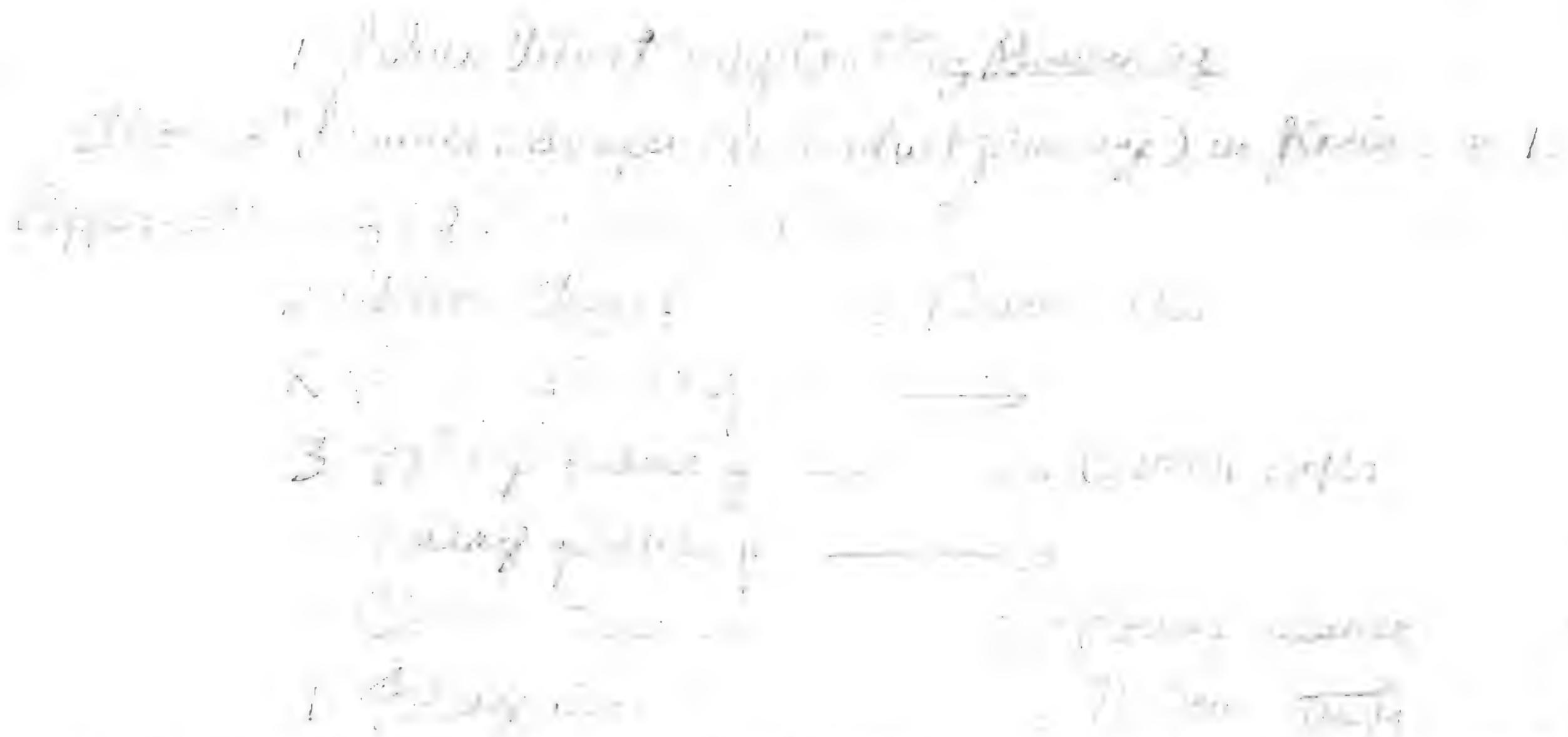
2 Brown Cap f. → Wilson's W.

3 Wilson's W. f. → Brown-caps

3 Yellow-throats f. →

2 Yellow-throats f. → Brown-caps

The white undersides of the wings of the Brown-caps are very conspicuous
ours in flight and during WF's. Typical flash pattern



This flock of Brown-caps was in the same position as yesterday. A group of Brown-caps, attended by a pair of Yellow-throats and a pair of Foliage-gleaners. First became active around 6:30 or 6:45, and dead by 7:00.

I saw a little more of the formation of the flock this morning. When I first arrived, I saw only a little group of approx. 3 Brown-caps, feeding actively but quietly. The Yellow-throats were moving about, some distance away from the Brown-caps. Apparently not part of the mixed flock yet, but heading regularly in the general direction of the Brown-caps. Then, around 6:30-6:45 there was a sudden outburst of SR-ws among the Brown-caps. At this time, I noticed that there were at least 6 Brown-caps in the group. What I imagine happens is that the family parties of Brown-caps sleep separately, and only encounter one another now and then after dawn. This particular flock seems to contain at least two family parties of Brown-caps. (I saw no signs of any birds "singing" on territories here this morning.) At the same time that I heard the big burst of SR-ws among the Brown-caps, I saw that they had been joined by the Yellow-throats, the Foliage-gleaners, and the Wilson's Warbler. I imagine that the Yellow-throats and Foliage-gleaners just start to feed at dawn, and then attach themselves to the Brown-caps whenever they happen to run into them. If they haven't run into the Brown-caps before the latter begin their frequent SR-ws, then they must certainly join the Brown-caps.

as soon as the SK-veg begins

The mixed flock today kept within the same boundaries as yesterday, but its movements within those boundaries seemed to be much at more regular today.

I know that there are Yellow-throats near the edge of the flock's range (if not actually inside the range). Why don't they join the flock? ???

The association of the Silver-throats with the flock this morning was very brief. When all the birds were feeding in the tree-tops. At this time, both the Silver-throats and the Brown-caps were particularly noisy — these 2 species do seem to stimulate one another's vocal powers. Also very active. But I couldn't really isolate any particular following or joining reactions. After a bit the Silver-throats do sometimes come very low, within 2 or 3 feet of the ground, they seem to be primarily birds of the high tree-tops. They are in high tree-tops more often than do the Brown-caps.

I wonder if the Pepper-shrike is a regular member of this flock? A very inconspicuous species. But colored quite like the Brown-caps.

The Wilson's Warbler is literally peripheral. Almost always on the outskirts of the flock.

The Brown-caps certainly do not seem to have any special call which is used only to bring the flock together or keep it together. (Vide Johnson's description of the insectivorous flocks on BCI.)

Walking in a new place. On Lewis's property, just above great bird

2:05 p.m.

Group II 1 Empidonax flycatcher, 1 slate-throat, 1 ♂ Wilson's W

Group III 1 slate-throat, 1 Black-chick W, 1 ♂ Wilson's W, and 1 Wren

Ward Flakes

(15)

So why go to back and white? I have heard before, the birds are not the most to do. But now I am so used to them, up and off with what not but this. So I am quite like the Ents of Atta spp. W. W.?

Group II 2 Yellow-throats, 2 Wil's W.

1 Yellow-throat or white-throated Wil's W.

1 Spotted Towhee f. Wil's W.

1 Yellow-throat f. Yellow-throats

1 Wil's W. f. Yellow-throats

Group I 2 Brown-caps, 1 Yellow-thigh, 1 Imm or ♀ Burner T, 20° Wil's W., 1 Purple-throated flycatcher

2 Wil's W. f. → Brown cap

I wonder why the Wilson's Warblers are not followed or joined more? They are so noisy, active, and brightly colored. Perhaps because they only utter single notes, no calls? Or because they are usually single? (In this connection, it might be noted that the 2 Brown-caps in the group above were widely separated, and they seemed to be much less attractive than many other Brown-caps I have seen.)

October 8, 1960
Cerro Punta

Walking below upper pasture 6:30 a.m.

Group I 2 Yellow-throats, 1 ♂ Wil's W.

I have twice now seen company, active and noisy, that up (one a wif bird, once a pair) flying about without attracting any serious attention from any other species.

I have also seen company; noisy and active. Black-chested Warblers were around without being followed or joined.

There used to be more here in October than now (birds here now than at lower altitudes. Or is it just that the Organ pipes are much more attractive than anything here?)

Group II 1 Wilson's W, 1 slate-throat

Group III 3 Yellow-throats, 2 Black-chesters, 1 ♂ Wilson's, 2 Collared R, 1 Pale-vented Robin, 2 footy caps, 2 Brown-billed Barbets

2 Black-chest f. → Yellow-throats

1 Yellow-throat f. → footy caps

2 Yellow-throat f. →

The footy caps are remarkably silent at this time of year.

I think that the footy caps are maintaining territories, or at least definite home ranges, here now. So, apparently, are the Yellow-throats. I have yet to see intra-specific fights in either species; but pairs & family groups seem to be well-replicated.

The Yellow-throats now seem to have segregated out of the rest of Group III. Feeding on ground by themselves.

It is obvious of course that the Yellow-throats down below were also maintaining territories or home ranges (unlike the Brown-caps). Never more than 1 family party per mixed group.

Many of the Yellow-throats both here and down are going about in family parties of 3 (never more), consisting of 2 adults and 1 young. So this is defi-

Mixed Flocks

(117)

With just the hunting over for them (See Teague's notes on Pasquels)

Open \rightarrow (all)

1 Spurred Flycatcher

2 Wilson's

Open mixed flock changes

1 Prong-billed Thrush \rightarrow Yellow-throats

1 Prong-billed Thrush \rightarrow Yellow-throats

1 Brown-capped Vireo also joins flock. No Brown-capped

2 Brown-capped Vireo

1 Collared R. \rightarrow

1 D. forna in flock, and 1 Saltator, and 1 Snow-throat W.

1 D. forna \rightarrow foot-caps

2 Collared R. \rightarrow foot-caps

1 foot-caps \rightarrow Yellow-throats

1 foot-caps \rightarrow Saltator

1 Open Tanager in flock now.

It seems obvious that there is no special relationship between the Yellow-throats and foot-caps here. The Yellow-throats will follow foot-caps, just as they will follow almost anything; but they do not seem to be "fixed" on foot-caps in the way they are on Brown-caps.

I think that the "garrulous" warbler association includes only the Redstarts (and possibly the Snow-throat), with the inevitable attendant Wilson's Warbler. It does not seem to include the Black-cheeked, which are primarily birds of the interior of scrub.

October 9, 1960
Cerro Punta

Working below upper pasture a 30 a.m.

Group I 3 Yellow-throats, 1 Wilson's W.

Group II 2 footy caps, 2 Collared R. 1 Wilson, 1 Green-throated warbler, 1 Yellow-throat, 2 Pezopetes, 1 Green-tailed towhee, 2 Collared R f → footy caps
2 Yellow-throats f →
1 Collared R f →
1 Brown-capped Vireo →
5 Wilson's W f → Collared R

Also 2 Flame-throated Warblers in flock

1 Flame-throat j → footy caps

Also at least 1 Tree-creeper in flock, + 3 Saw-whets + a sparrow
and a Black-bellied Warbler. Also couple with flycatchers

A squirrel with the flock again! Also 1 wren, + 1 Rose-breasted R.

I am fairly certain that the warbler with this flock is Leptasthenura affinis. It is staying with the flock very closely for quite a long time. (This may also be the species I saw with the flock just above the claus a few days ago.)

1 footy cap j →

2 Collared R j →

I think that there is only one large flock in the whole area. Quite diffuse, splitting and rejoining in rather amorphous fashion. Possibly a few very small flocks (no more than 2 or 3 birds) are more or less separate most of the time.

Yesterday morning, this flock formed rather late (after 7:30) and remained conspicuously active for quite a long time. This morning it joined earlier (very shortly after I arrived) and did not remain conspicuously active very

Mixed Stocks

⑨

At 7:30 a.m. the front of the large flock was a very
confused mixture of many species. They had just arrived together. No
leader. No Nesting. No singing. No courtships.

There were a lot of young or immature Chestnut-sided Warblers
here. They were flying around quite silent. I can recall hearing most of the
time.

- 1 Prairie Warf. →
- 1 Yellow-thro. f. → foot-caps
- 1 Collared R. f. → foot-caps

October 10, 1960
Cerro Punta

Same place 6:30 a.m.

Watching a pair of Black-chuck Warblers feeding by themselves for
quite 10 minutes. Noisy. In an area which is often visited by the large mix-
ed flock. And yet they were not followed or joined by anything! It certain-
ly looks as if they are not able! They didn't try to join anything else
either. So I think this species may be classified as "occasional passive nucle-
us".

Group I 3 Yellow-throats, 2 Black-chucks, 1 Brown-caps Vireo, 2
foot-caps, 2 Wilson's W., 1 slate-throat R., 2 Collared R.
2 Black-chucks f. → Yellow-throats

(There were not the Black-chucks which were not followed or joined
earlier.)

- 1 Yellow-thro. f. →
- 1 intra-specific fight between Wilson's Warblers
- 1 Black-chuck f. →

3 Wilson's W f →

Two squalls with the flock again

Watching the first pair of Black-cuckoos again. Still not being followed or joined (although there are Wilson's Warblers, Flycatchers and Yellow-throats, at least, in the neighborhood).

There is a family of 3 Yellow-throats here which has been moving about by itself for quite a long time now. It was associated with the large flock earlier this morning, but the warblers (and the foot-caps) flew off and the Yellow-throats made no attempt to follow.

It is my impression that, here and now, with the birds which are warblers and bird-tanagers (i.e. the Black-cuckoos and the foot-caps) being so relatively un-attractive, the Yellow-throats tend to segregate out from the mixed flocks quite frequently - much more frequently than had been here (and much more frequently than the Yellow-throats down now, where the Brown-caps are active and noisy).

I think that the relative un-attractiveness of Black-cuckoos and especially foot-caps here now (as compared with last Friday) must be due to the fact that they are less noisy now.

This indicates that voice, not color or movement, is the principal constituent of a species attractiveness.

1 Collared R f → flat throat

1 Brown-capped Vireo f → flat throat

1 flat-throat f →

2 Wilson's W f →

2 Creepers (same species as yesterday) also in flock

January 8, 1965
Rio Piedras

Evening 12:12 - 1:00

Group I 1 ♀ Varied B. 1 ♂ Yellow-Rump, 1 ♀ Saenger, 1 Blue
Tanager
1 ♀ Lamp f. → ♀ Yellow-Rump
1 ♂ Palm f. →

III 10. Blue & tree-creepers feeding very down low, no more than
1 foot off the ground. Tree Creepers

Group II 1 ♀ Varied, 2 ♀ Yellow-Rumps, 4 Palms

1 ♀ Yellow-Rump s. → Palm
1 ♂ Yellow-Rump f. → Palm

III Again, tree Palms were very low

Group III 4 ♀ Yellow-Rump f., 1 ♂ Yellow-Rump, 1 ♂ Saenger,
1 ♂ Blue Backed Tanager, 3 Plain-colored Tanagers (!), 2 Golden
Mantled Tanagers, 1 Blue Tanager, 1 Panama Wren, 1 Green-backed
T. and 1 ♀ Puerto Rican

1 case ♀ Yellow-Rump definitely not being followed

1 Blue f. → Plains

1 case ♂ Yellow-Rump definitely not being followed

1 Golden-mantled f. →

1 ♀ Yellow-Rump f. → Open-back

In this last flock, the Blue Grosbeaks I saw were just left the Champlooculus group. I? The separation between the two groups was partly "casual".

The Blue Grosbeaks, 2 Palm warms, 4 Yellow-rumps were feeding quite low west of the tree; rather like the Palms I saw with Yellow Rumps earlier.

I also saw a mixed flock of Palms and Grosbeaks earlier this morning. They were feeding only moderately low, and kept quite apart from the Champlooculus.

The Yellow-rumps certainly do not seem to be nuclear for any of the nuclear blue and green species!

Also 1 Black-capped Saltator in group

Group IV 2 ♀ Variables, 1 ♀ Yellow Rump

2 ♀ Yellow Rump f. → Variables

Group I 1 ♂ Variable, 1 ♀ Yellow Rump, 1 ♂ Yellow Rump

1 more ♂ Yellow Rump definitely not being followed

Group II 1 ♀ Yellow Rump, 1 Palm, 1 ♂ Variable, 1 ♀ Variable

There are really quite a lot of Yellow-rumps here today. They are quieter, on the whole, than I expected. Quite silent, usually except when flying and/or disturbed by me.

They frequently occur in groups of 3-6, but apparently single

Ward Flocks

(23)

birds and flocks of birds. The birds were put scattered all along the edge of the road and the birds were to follow in the flock.

I have had 1 group of 10, 10 few birds (few Yellow-Rumps. Also 10 more - 10 to 100 but 10 others 30 do.

It was to my satisfaction to see how the birds were much more spaced in the sun and the birds they were to be presented from being nuclear by 2 factors 1. They must be genuine nuclear because the other species don't last so long. 2. They must be only genuine nuclear because few when with others of the flock. (The birds were to close, supposed to run away. Yellow-rump is noted to stay lower in the vegetation than most other tanagers.)

I have not as yet for so long time too far to determine how they are reacting to the Yellow-Rump. It may be significant, however, that the few flocks I have seen have all been associated with Yellow-Rumps.

November 18, 1960
Rio Piedras

8:00 a.m.

Group I 4 ♀ Yellow-Rump, 1 ♂ Yellow-Rump, 1 Clay-colored Thrush,
1 ♀ Summer Tanager, 2 Green-backed Tanagers, 1 ♂ Banded Ant-shrike

3 males ♀ Yellow-Rump not being followed
1 male ♂ Yellow-Rump not being followed

Group II 4 ♀ Yellow-Rump, 2 ♂ Yellow-Rump, 1 ♀ Black-billed Seed-finch, 1 imm. ♂ Tephronia (Blue Grosbeak?), 1 Buff-throated Saltator
5 males ♀ Yellow-Rumps not being followed

1 male & 1 sparrow & 20
2 [♂] Yellow-Rumps, not flying flocks.

Group II 2 [♂] Yellow-Rumps, 1 Golden-wax. [♂] Yellow-Rump not flying flocks.

1 Buff-throat ♂ →
1 ♀ Yellow-Rump ♀ → Buff-throat

Group III 4 ♀ Yellow-Rumps, 2 ♂ Yellow-Rumps, 1 Golden-wax
Tanner, 1 ♂ Fulvous-vent Sparrow, 1 ♀ Savigny

1 ♀ Savigny ♂ → Yellow-Rumps
1 Golden-wax ♂ → Yellow-Rumps
1 ♂ Fulvous-vent ♂ → Yellow-Rumps

I was again surprised, today, by how remarkably infrequent the ♂'s Yellow-Rumps are joined and followed — especially in view of their extreme commonness. At least 80% of all the Yellow-Rumps I saw today were not associated with mixed flocks in any way.

The few Savignies I saw today were staying low in the shrubbery even more consistently than the Yellow-Rumps. (Yellow-Rumps do go quite high in trees with some appreciable frequency.)

①
MIXED FLOCKS - QUITO REGION

May 19, 1962,
Near Kono

Yesterday I saw a whole group of birds feeding and
milling in a street along the ravine. Including at least 4 gracile
cowbills, 4 firebills (2 above, 2 below a pair, the other 2
so thin scattered), a pair of Thraupis olive cyanea, at least one of
Agelaius tricolor, one bird that looked very much like a Rufous-
fronted Solitary-glosser, various buzzong-tanagers, and probably
some other stuff.

For a while, it looked very much as if the firebills were
playing a passive nuclear role. They were repeatedly followed by the
cowbills, and the 2 species, in turn, were followed by the olive-
cyanea's. But then the firebills moved further on, into some
trees, and were not followed again. The whole group seemed to dis-
perse in an unobtrusive way.

The firebills (being very conspicuous) may be as attractive
as possible to birds of other species, without having developed any ap-
peal mechanisms especially designed to attract birds of other species,
and without being the object of any special intra-specific preferences.

I have yet to see any signs of an active nuclear species here

RE INTER-SPECIFIC REACTIONS - QUITO

May 22, 1952

None

There is a species of Mycelobius here that is apparently identical. Quite remarkably similar to Myiozetetes similis, except for yellow eye-ring and white patches on tail.

Always in pairs (at least now)

Feed in eucalyptus trees, at same levels as Diglossops. Foraging for insects in the same way. Also feed in scrub, in same areas as Diglossops, D. atrovirens, and (probably) Conirostrum. As far as I know, do not feed on flowers or nectar.

Must be an important competitor of Diglossops (at least)

Does not fly catch like the Chiroxiphi residents (presumably there are no suitable flies here).

Utters lots of "Tut" "CN"s. sometimes accelerated like "Tut", of Diglossops. Perhaps utters "Tuk"s as well

song quite like that of D. atrovirens, but probably more "warbling", and usually or always ending with a distinct "Tazeeza".

Ignores and is ignored by Diglossops - even when feeding within a few inches of the latter.

Extra-specific flights. Cuc-Puata

Parula W. 1

Silver-throat 11

Wilson's W 11

Yellow-throats 1

Pale-bellied Thrush 1

Supplanting - Ceno Punta

Kiskadee → Pale-bellied Thrush 1

Pale-bellied Thrush → Silver-throat 11

Silver-throat → Brown-cap 1

Yellow-throat → Wilson's W. 1

Encerano, E. (1957) "The birds of the province of
Boas del Toro, Panama" —
Condor 59, p. 247-262

Sporophila torqueola and S. curvirostra curvirostra
associating together. Also Volatinia.

Griscom, L. (1932) "The distribution of bird life
in Guatemala" — Bull. Amer. Mus.
Nat. Hist. 54

Volatinia nearly always in company with
Sporophila

Wetmore, A. (1943) "The birds of southern
Veracruz, Mexico" — Proc. U. S. Nat.
Mus. 3164, vol. 73, p. 215-340

Sporophila torqueola and Volatinia
in association

Catamenia analis

Catamenia inornata

Catamenia leucosterna ♂ Pale Yellow-bill Rufous
under tail-coverts Much lighter
than *plebejus*

David's Notes

Jamvis

- 1 Brown cap → Yellow-thigh
- 2 Foky cap → Yellow-thigh
- 1 Yellow-thigh → slate throat
- 1 Yellow-thigh → Brown cap
- 1 Yellow-thigh → Foky cap
- 1 Yellow-throat → Yellow-thigh
- 2 Silver-throat → Brown cap
- 1 Speckled → Silver-throat
- 1 Flame throat → Silver-throat

Following

- 3 Yellow-thigh → Foky cap
- 1 Yellow-throat → Flame throat

Supplanting

- 1 Red breasted Barbet → Baywing T.

Indra specie fight

Brown-cap 3

foot cap 1

Yellow-thigh 2

March 8, 1959. Cerro Punta

①

GENERAL COMMENT ON THE MIXED
SPECIES FLOCKS I HAVE SEEN NEAR
HERE ON THIS TRIP.

Several, mixed-species flocks are conspicuous for their
absence here now. The only common mixed flocks we have seen
are based upon the two Redstarts, especially the slate-throated
Red-start. And tanagers are seldom or never associated with
such flocks now.

The nearest thing we have seen to a mixed flock involves
tanagers or finches or a few associations of several species
feeding in the same trees or bushes for more or less brief periods
such associations are probably purely "casual".

Yellow-throated Tanagers and Yellow-throated Atlapetes
are often feeding near together in the same hedges in the whole area
from appr. 5000 ft to appr. 7000 ft.

We once saw Yellow-throated Tanagers associated with a flock
based upon Black-cheeked Warblers in a forest above 7000 ft.

Down in the sub-tropical forest, between 4000 and 5000 ft.,
we once saw a few Brown-capped Bush-tanagers, Silver-throat-
ed Tanagers, Wilson's Warblers, and Yellow-race Warblers, feeding
in the same trees and moving about more or less together for a
short time.

March 10, 1959
Cerro Punta

ADDITIONS

Since writing the above a couple of days ago, I have been watching one or more mixed flocks in second-growth scrub & light forest at the 7000 (appr.) ft. level. Based on Collared Redstarts always including 1 or 2 or more Wilson's Warblers and at least 1 pair of Yellow-throated Tuchs. Sometimes including Yellow-throated Altapetes, Sooty-capped Bush-tanagers, Slate-throated Redstarts, Flame-throated Warblers (Verivora gutturalis), Black-cheeked Warblers (Basileuterus melanogenys), and a Spurky Tree-runner. The Collared Redstarts obviously controlling the direction of the movements of the flock.

July 11, 1959 Cerro Compania

MIXED "FEEDING ASSOCIATIONS" HERE

On the trip here, I was surprised to find large groups of several species of tanagers here. All more or less feeding together in the same trees; and occasionally (at least) most of the birds moving in the same direction, evidently; but the sort of association seems to be much looser than the Plain Tanagers flocks on Río Colorado, or the Brown-capped Bush Tanagers and Collared Redstart flocks at Cerro Punta.

There do not seem to be any really "nuclear" species in the "feeding associations" ("FA's") here now; although all the groups I have seen so far have included at least Silver-throated & Bay-headed Tanagers and Tawny-capped Euphonias. But the birds in the FA's seldom or never flew off together, one right after the other, as the Plains-Blues-Palmers may do on BCI.

It may be significant, in this connection, that although many of these species are quite noisy, giving a lot of CN's, they none of them utter as many CN's as the nuclear species of other flocks I have watched.

I have also seen quite a number of other species associated with the FA's here from time to time today. Among these were Black and Yellow Tanagers (1 pair, for quite some time), Blue Tanagers (1 pair, for a short time), a single or Green Honeycreeper (for a short time) and a single or a pair of Hepatic Tanagers (for a short time).

March 20, 1960 Cerro Punta

MIXED FLOCKS, 7000 ft. AND ABOVE

We have only been watching flocks from high up the mountain. At these altitudes mixed flocks are still common, apparently not disturbed by the approach of the breeding season.

Almost every flock we have seen here, at these high altitudes, has include several Collared Redstarts, one pair of Yellow-throated Finches, one or more Wilson's Warblers, and a single bird or a pair of sooty Capped Bush-tanagers. Probably also a pair of Yellow-throated Atlapetes in almost every flock, and one or more birds of one or more species of Dendrocolaptids. At the highest levels, one or more Black-cheeked Warblers are also closely associated with almost all flocks. slate-throated Redstarts, Flame-throated Warblers, and even Dignaces, are sometimes associated with the flocks, but they seem to be less common and/or more independent at all these relatively high altitude.

(Note: Collared Redstarts are not common now at relatively low altitudes where they were common during March of last year; and I have yet to see Flame-throated Warblers quite as low as I did last year.)

March 21, 1960 Cerro Punta.

MIXED FLOCKS, 7000 ft. AND ABOVE.

I don't think my comments yesterday were very penetrating

We have actually been observing a kind of flocks.

Below the picture the flocks are ~~mainly~~ composed of Yellow-stripped Finch, Olive-throated Atlapetes, Sooty-Capped Bush-tanagers, and Wilson's Warblers. (The miscellaneous other things from time to time, of course. Today we even saw a Pezopetes now and then混雜 with a flock below the picture.)

Above the picture Colored Redstarts & Black-cheeked Warblers become regular "members" of the flocks (along with other things around).

Among the definite positive social reactions we have seen in the flocks were the following: 1 case of a Sooty-Capped Bush Tanager following a pair of Yellow-stripped Bush Tanagers. 1 case of a Wilson's Warbler following a pair of Sooty-Capped Bush Tanagers.

MIXED FLOCKS, 6000 ft OR LOWER

Today we saw a pair of Silver-throated Tanagers join, and twice follow, a flock of 4 or more Brown-capped Bush-tanagers.

March 22, 1960. Cerro Punta

MIXED FLOCKS, 6000 ft OR LOWER

Today we saw a most interesting flock, quite low, almost at the upper edge of the "claves".

It was composed of the following birds: at least 3 Brown-

(6)

Capped Bush-tanagers, 1 pair of Spurred Tanagers, 1 ♂ Scarlet-tufted Dacnis, 1 ♂ Wilson's Warbler, a Blue Tanager definite by moving about together. The only species social reaction we noted was one instance of a Spurred Tanager chasing away the Dacnis when the latter got too near.

In the same area, at approximately the same time, were at least 2 (and probably more) Silver-throated Tanagers, and 1 slate-throated Redstart.

This group would appear to have been a mixture of Highland mixed flock and a lowland mixed flock. (It may be significant, in this connection, that it has been raining hard all along the upper part of Cerro Punta and the volcano almost steadily since yesterday afternoon. The rain has been much less lower down, near the floras. So perhaps the highland flocks have been moved downward.)

March 29, 1960. Cerro Punta

ALL MIXED FLOCKS HERE

Although we haven't been able to research in the way of mixed flocks here this trip, a few things seem to be clear.

The principal constituent of the flocks is the Brown Cap — Yellow-thigh relationship or the Footy Cap — Yellow-thigh relationship. This seems to form the nucleus of all the really large and conspicuous flocks.

One or two Wilson's Warblers usually follow each flock. They might be considered "parasites", except for the fact that their loud CN's may increase the attractiveness and cohesion of the flock as

a whole

We have seen few or no obvious cases of Wilson's Warblers following or joining other wood-warbler flocks in mixed flocks. All or most Wilson's Warblers just seem to drift along in more or less the same general direction, at approximately the same speed, as the particular flock they happen to be associated with at the time.

The Yellow-throated Phoebe flocks are even more "parasitic" than Wilson's Warblers, as they contribute much less to the general numbers of a mixed flock. At this season, at least, the Yellow-throats are always in pairs, and there is never more than one pair per flock. It is also fairly possible that the Yellow-throats perform more "special" following reactions than the Wilson's Warblers.

(The roles of the tree-nesters associated with mixed flocks may not be very different from that of Wilson's Warbler and/or that of the Yellow-throats. The Parus toadies also behave in a somewhat similar way.)

(The behavior of Black-cheeked Warblers in relation to mixed flocks is discussed in today's notes on Balearica.)

We have not seen enough Redstarts associated with flocks here this trip to be able to add anything to my previous notes.

D

May 23, 1961 Cieno Pichincha, near Quito

On previous years, I got the impression that mixed flocks of 9-patched songbirds did not occur here.

During my observations this year, however, I have seen a few mixed flocks. Including almost certainly: Atlapetes rufigularis, Diglossa atroviridis, the local Newsfinches, Thraupis leucomelas, the Black-vented Warbler (Basileuterus nigroventris), and a local species of furnariid (rather Hypocnemis-like in shape — cinnamon above all over, lighter below probably with a dark streak through the eye). But I still think that mixed flocks are usually purely casual aggregations (see below for the one conspicuous exception).

It may be significant that none of the species listed above show much intra-specific gregariousness.

It may also be significant that mixed flocks were much more conspicuous this evening than at any other time I have watched birds here. It was very foggy this evening, with nearly constant drizzle.

The local redstart (Myiochanes melanops refinatus) is definitely not part of the mixed flocks here. It stays up in the trees most of the time, while the mixed flocks are usually in moderately low shrubbery and hedges.

The only very distinct inter-specific relationship I have noted was between Atlapetes rufigularis and the local furnariid described above. This evening, a pair of the furnariids seemed to be following a pair of the finches, quite steadily, (when the birds were undisturbed).

Mr. Mo. Hicks	Mr. Mo. Hicks	Mr. Mo. Hicks	Mr. Mo. Hicks	Mr. Mo. Hicks	Mr. Mo. Hicks	Mr. Mo. Hicks	Mr. Mo. Hicks
Black-cheek W	WT 1						
Golden-green W	WT 1						
Yellow-throat R	WT 1						
Coloured R	WT 1						
Polyphemus Sulphur-green	WT 1						
" "	WT 1						
" "	WT 1						
" "	WT 1						
" "	WT 1						
" "	WT 1						
" "	WT 1						
" "	WT 1						
" "	WT 1						

U

POSSIBLE CASES: SOCIAL MIMICRY

I Large carnivorous tyrant flycatchers of Central American region. Buff-yellow breasted, striking black and white stripe pattern on breast species of the genera Megarynchus, Myiarchus, Myiozetetes. References: SUTTON, G. M., (1931), "Mexican Birds", Univ. Okla. Press, Norman, Okla. STURGIS, B. S. (1938) "Field Book of Birds of the Panama Canal Zone", G. P. Putnam's Sons, N.Y. - London

PARTLY SOCIAL MIMICRY?

I Supposed examples of Mullerian or, more probably, Batesian mimicry. The Black Drongo, Dicrurus adsimilis, and a Black flycatcher, Melanorhinus pammelanus. Kiski-birds and allies. Reference: SHEPPARD, P. M. (1958), "Natural Selection and Heredity", Hutchinson & Co., London

HUXLEY, J.S. (1938) "Threat & warning coloration in birds, with a general discussion of the biological functions of color" — Proc. 2nd Int. Orn. Congr., Oxford, p. 430-455

Use of word "episemantic"
also states the fact that the same color pattern may subserve several different functions.

FRIEDMANN, H. (1935) "Bird societies" — from "A Handbook of Social Psychology", Clark Univ. Press, Worcester, Mass., U.S.A., pp. 142-184.

General survey of sociability in different groups

— (1950) "The breeding habits of the Weaverbirds. A study in the biology of behavior patterns." — from the Smithsonian Report for 1949, Smithsonian Inst., Washington, pp. 293-316

General survey. Philetairus particularly useful example

WING, L. (1946) "Species association in winter groups" — Auk 63, p. 507-510

11

GENERAL REFERENCES

COTT, H. B. (1946) "The edibility of birds: illustrated by five years' experiments and observations (1941-46) on the food preferences of the hornet, cat and man; and considered with special reference to the theories of adaptive coloration." — Proc. Zool. Soc. London 116, pts 3 and 4, pp. 371-524.

States that "souability" is a factor reducing vulnerability. (See also Mottram)

Also mentions that black + white are the most conspicuous of all colors.

MOTTRAM, J. C. (1915) "The distribution of secondary sexual characters amongst birds, with relation to their liability to the attack of enemies." — Proc. Zool. Soc. London 1915, p. 663-678.

More Notes from Cott.

"Flaith colors" are "proepisemantic" according to Huxley, 1934 and 1938.

White color of sea-birds. Called "synepisemantic" by ~~anentomogramma~~ Cott

ARMSTRONG, E. A. (1946) "The coloration of sea-birds" — Birds of Britain, 2, p 15-19.

11.
DARLING, FF (1952) "Social Behavior and
Survival" - Auk 69, p 183-191.

lists some advantages of gregarious feeding
and communal defense against predators

CONDOR,

SOME ADAPTATIONS INVOLVED IN THE DEVELOPMENT OF GREGARIOUS HABITS

A bird usually reacts to the presence of other birds by showing several contradictory and more or less "incompatible" tendencies. It is often partly hostile and partly "friendly", apparently wanting to join the other birds, and also attack them and/or escape from them at the same time. The resolution of such conflicting reactions is a particularly difficult problem in highly gregarious species, which have had to devise methods of both increasing the general social or flocking tendencies and controlling the hostile responses which are provoked by any close association of different individuals, (it seems to be very difficult, i.e. very disadvantageous, to dispense with hostility altogether). Most gregarious species have evolved specialized adaptive behavior patterns in order to attain both objectives.

The patterns which help to promote flocking are usually obvious and relatively simple. Almost all the highly gregarious species have developed special social calls, conspicuous wing and/or tail movements, and (very frequently) increased general mobility or "restlessness", all of which seem to be designed to increase the attractiveness of a social group and maintain cohesion within it. Some gregarious species have developed such characters without greatly altering the "hierarchy of instincts"; but others have also evolved a special, and more or less independent, "general social" drive or instinct which is not found in more solitary species.

The control of hostile responses would seem to be a more complicated matter in some respects, and has been achieved by a greater variety of methods. Some species have evolved special displays (ritualized social signals) which may be used by one bird of a group to reduce the strength of the internal attack and/or escape drives of other members of the group, while other species have developed displays which help to divert the overt expression of hostility within the group into relatively harmless channels. The overt expression of hostility may even be reduced without the intervention of special displays, by directly reducing the response to certain particular types of hostile stimuli (without weakening the internal hostile drives in general). Some species may use different methods in different circumstances; and these variations would also seem to be adaptive, in some cases at least, as they can be correlated with particular factors of the external environment.

THE ADAPTATION INVOLVED IN THE BEHAVIOR OF GROUPS IN BIRDS

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CLASSIFICATION

As there seems to be some evidence that Diglossa may be related to Coccothraustes, I have looked at several species of Cowbills in the USNM. The plumage of the ♂'s of some Cowbills is surprisingly bright, with considerable black and/or iridescent blue, although the actual patterns are not particularly reminiscent of any Flower-peckers I know. There seems to be considerable sexual dimorphism in all or most of the species of Cowbills in which the ♂'s are brightly colored. (The ♀'s tend to be much duller.)

Below are descriptions of the brightly colored ♂'s of 3 species of Cowbills.

1. sitticolor Black head & throat; blue back; rufous breast and belly.

2. albifrons Generally black, with a white forehead, and blue on the back and upper wing-coverts.

3. atrocyanum. Generally black, with blue on crown, back, scapulars, and upper wing-coverts

gregarious

Relatively aggressive

Hostile acts not reduced

A relatively large proportion of hostility expressed by display

Relatively few distinct types of display

Some special types of display (e.g. mimetic)

Non-gregarious

Relatively aggressive

Hostile acts not reduced

A relatively smaller amount of hostility expressed by display

A relatively large number of distinct types of display

Few or no special types of display

CLASSIFICATION

The tanagers, meanwhile, would seem to fall into the following major groups:

I Euphoniæ. Quite distinct

II Blue and Green Tanagers. Usually, but not always, with some bright (frequently iridescent) blue or green in plumage. Also frequently black. Sometimes bright red or yellow. Very few species with dull plumage. Feathers apparently always essentially identical

Tanagrella

Chlorochrysa

Pipreola

* *Tangara*

Iridosoma

Dolichiraupis

Stephanophorus

* *Poecilotraupis*

Baugia

Buttiaupis

* *Dubiusia*

Courococoma

* *Thraupis*

chloromis?

III Red and Yellow and Black Tanagers. Much more varied, although less successful, than the Blue & Green Tanagers.

The typical members of this group are brightly colored, with large areas of red, orange, yellow (and, less frequently, white), usually contrasted with black. In almost all these species, there is strong sexual dimorphism, the ♀'s being noticeably duller than the ♂'s.

There are also a few members of this group in which both sexes are dull, usually grayish or olive, and identical with one another. They might be considered "bare-feathered" species.

None of the species in this group has bright blue or green in the plumage.

In addition to the more or less typical members of the group, there are a number of other, more or less aberrant, species which may be attached to it.

A. Typical Members of the Group.

Spinetails

- * *Rhamphocelus*
- * *Pyrrhura*
- Phlogophilus*
- Calochaetes*
- Chlorothraupis*
- * *Habia*.

B. Almost Certainly Members of the Group

- Lanius*
- * *Tachyphonus*
- Heterospingus*
- Eumomota*

(3)

- * *Phedinaeilla*
- * *Mitrospingus*
- Calyptophaea*
- Phoenicophaea*
- Alcippe*
- Comptosia*?
- Leucosticte*

IV Honeycreepers Quite another problem!

V Warbler & Finch-like Tavagers Probably extremely miscellaneous

- * *Chlorospingus*
- Crissophaea*
- Neuropsingus*
- Neothraupis*
- Heinitraupis*
- Chrysotilapias*
- Erythrocotilapias*
- Thlypopsis*
- Pseudospingus*
- Microspingus*

VI Very problematical genera. Also obviously miscellaneous

- Cyanicterus*
- Orthogonyx*
- Neurolops*

3

Malacothraupis
Trichothraupis
Cyanospiza
Pyrrhocoma
Hemisora
Trotterapus
Conothraupis
Lamprospiza
Orchesticus
Oreothraupis
Sakeschlawrys
* Cisopis

Regular Prairie Butterflies

Non winter species

Spring and summer species

Common Copper

Blue Copper

Green Copper

Frequent Associates

Pyrgus communis

Summer Copper

Occasional Prairie Butterflies

Red-legged Blue Morpho

Bananaquit?

Occasional Associates

Common Checkered Copper?

White-lined Copper?

Euphaedra

hafataora

Regular Prairie Warbler Species

Brown-capped Bush-tanager

← ? foot-long.

Black-chuck w.

golden-yellow w.

Regular Active Warbler Species

Yellow-throated Bush

Wilson's Warbler

Collared Redstart ?

Regular Auornates

Rufous-fronted Foliage-gleaner

Other furnariids? Toucanet?

Yellow-throated Bush-Gulch

Flat-throated Redstart

Summer Tanager? Robin?

Occasional Auornates

Blue-throat

Speckled Tanager?

Flame-throated Warbler?

Pepper-shrike

Brown-capped Vireo

Open-billed

Long-billed Barbet?

Flame-colored Tanager?

?↑

✓

✓

↓

Description of supposed Rufous-bellied Foliose glaucer

Forehead rufous

Back of neck (or crown?) greyish

Light streak behind eye

Generally buffy underneath

Tail and wings (not rump) bright rufous

Mixed flocks

Isla del Peñón
June 2 1952

Awoke at 7:30 a.m.

Lots of BB Grangotts, several streaked falcons, one juv.
one sangre seen almost immediately.

8:00 a.m. Lots more sangres. A large party of RLBH's
(at least 3♂'s and 3♀'s). And more streakeds. Not really associ-
ating with one another, altho all in same area.

8:05. First BT seen. Alone but in same area.

Some BG's around

1:00 p.m. I have still to see any PT's or PET's around. The
absence of PT's is particularly surprising as there are lots of coco and
other palms around.

As a result of the absence of these 2 nuclear species, there are
no "real" mixed flocks around. Lots of associations between different
species, but all seem to be purely "casual".

C

MIXED SQUIRREL-BIRD FLOCKS

Mountains above El Valle - Sept 8, 1962. A large mixed flock of birds, including ant-birds and at least one tree-wreper. With a reddish squirrel (perhaps the usual lowland Red-tail) near the center. Birds obviously not mobbing the squirrel.